

What is claimed is:

1. An endocardial treatment device comprising a scaffold structure sized and configured to rest within a left atrium between a septum wall and an opposite lateral wall, the scaffold structure supporting a first component sized and configured to rest adjacent to tissue on a posterior wall essentially surrounding a pulmonary vein region, the scaffold structure also supporting a second component configured to rest adjacent to tissue on the posterior wall and overlay a portion of a coronary sinus and a portion of a posterior mitral valve annulus within the left atrium.

2. A device according to claim 1, wherein at least one of the first and second components includes at least one therapeutic element.

3. A device according to claim 3, wherein the therapeutic element comprises a tissue ablating element.

4. A device according to claim 1, wherein at least one of the first and second components includes at least one diagnostic element.

5. A device according to claim 4, wherein the diagnostic element comprises a heart function sensing element.

6. A device according to claim 1, wherein at least one of the first and second components includes at least one energy delivery component.

7. A device according to claim 1, wherein at least one of the first and second components includes at least one ablation agent delivery site.

8. A device according to claim 7, wherein the ablation energy delivery site includes a micro-port.

9. A device according to claim 7, wherein the ablation energy delivery site includes a micro-needle.

10. A device according to claim 7, wherein the ablation energy delivery site includes a needle-less

injection port.

11. A device according to claim 1, wherein at least one of the first and second components includes an array of ablation energy delivery sites.

5 12. A device according to claim 1, wherein at least one of the first and second components includes at least one catalytic energy source to affect intake of an ablation agent by tissue.

10 13. A device according to claim 12, wherein the catalytic energy source comprises at least one of an ultrasound source, and a radiofrequency microwave source, and an electrophoresis source, and a heat source.

15 14. A device according to claim 1, wherein at least one of the first and second components includes at least one ablation agent delivery site and at least one catalytic energy source to affect intake of ablation agent by tissue.

20 15. A device according to claim 1, wherein at least one of the first and second components includes at least one ablation agent delivery site, and further including at least one catalytic energy source to affect intake of ablation agent by tissue.

25 16. A device according to claim 15, wherein the catalytic energy source is carried by the scaffold structure.

17. A device according to claim 15, wherein the catalytic energy source is implanted.

30 18. A device according to claim 1, wherein the scaffold structure is free of a component that contacts tissue along an anterior wall of the left atrium.

19. A device according to claim 1, wherein the scaffold structure includes a distal strut that engages tissue at, within, or beneath the mitral valve annulus.

35 20. A device according to claim 1, wherein at least one of the first and second components includes at

least one ablation agent delivery site, and further including a source of an ablation agent coupled to the ablation agent delivery site.

21. A device according to claim 20, wherein the  
5 ablation agent comprises a tissue fixative.

22. A device according to claim 21, wherein the tissue fixative includes alcohol, or ethanol, or DMSO, or acetone.

23. A device according to claim 20, wherein the  
10 ablation agent is in liquid form.

24. A device according to claim 20, wherein the ablation agent comprises a hydrogel formulation.

25. A device according to claim 1, wherein at  
15 least one of the first and second components includes at  
least one ablation agent delivery site located along a  
mural facing surface of the at least one component and  
not along a surface facing a blood volume.

26. A device according to claim 1, wherein the  
first component includes a superior element sized and  
20 configured to rest adjacent to tissue above the pulmonary  
vein region and an inferior element sized and configured  
to rest adjacent to tissue below the pulmonary vein  
region.

27. A device according to claim 26, wherein the  
25 second component extends from the inferior element.

28. A device according to claim 1, wherein the scaffold structure includes an elastic material.

29. A device according to claim 1, wherein the scaffold structure is sized and configured for delivery  
30 to the left atrium in a compressed condition within a catheter.

30. An endocardial treatment system comprising a scaffold structure as defined in claim 1, and an ablation element sized and configured to be deployed in the  
35 coronary sinus in a region overlaid by the second

component.

31. A method of treating tissue in a left atrium comprising using the device as defined in claim 1.

32. A method according to claim 31, further  
5 including deploying an ablation element in the coronary sinus in a region overlaid by the second component.

33. An endocardial treatment device comprising a scaffold structure sized and configured to rest within a left atrium between a septum wall and an opposite lateral  
10 wall, the scaffold structure supporting a component sized and configured to rest adjacent to tissue on a posterior wall essentially surrounding a pulmonary vein region, the scaffold structure being free of a component that contacts tissue along an anterior wall of the left  
15 atrium.

34. A device according to claim 1, wherein the scaffold structure includes a distal strut that engages tissue at, within, or beneath the mitral valve annulus.

35. A device according to claim 33, wherein the  
20 component includes at least one therapeutic element.

36. A device according to claim 35, wherein the therapeutic element comprises a tissue ablating element.

37. A device according to claim 33, wherein the component includes at least one diagnostic element.

25 38. A device according to claim 37, wherein the diagnostic element comprises a heart function sensing element.

39. A device according to claim 33, wherein at least one of the first and second components includes at  
30 least one energy delivery component.

40. A device according to claim 33, wherein the scaffold structure includes a distal strut that engages tissue at, within, or beneath the mitral valve annulus.

41. A device according to claim 33, wherein the  
35 component includes at least one ablation agent delivery

site.

42. A device according to claim 41, wherein the ablation agent comprises a tissue fixative.

5 43. A device according to claim 42, and further including at least one catalytic energy source to affect intake of ablation agent by tissue.

44. A device according to claim 43, wherein the catalytic energy source is supported by the scaffold structure.

10 45. A device according to claim 43, wherein the catalytic energy source is implanted.

46. A device according to claim 43, wherein the catalytic energy source comprises at least one of an ultrasound source, and a radiofrequency microwave source, 15 and an electrophoresis source, and a heat source.

47. A method of treating tissue in a left atrium comprising using the device as defined in claim 33.

20 48. A heart treatment device comprising a scaffold structure sized and configured to rest adjacent to epicardial tissue essentially surrounding a pulmonary vein region, the scaffold structure supporting an ablation agent delivery site and at least one catalytic energy source to affect intake of ablation agent by tissue.

25 49. A method of treating epicardial tissue comprising using the device as defined in claim 48.

30 50. A heart treatment device comprising a scaffold structure sized and configured to rest adjacent to endocardial tissue essentially surrounding a pulmonary vein region, the scaffold structure supporting an ablation agent delivery site and at least one catalytic energy source to affect intake of ablation agent by tissue.

35 51. A method of treating endocardial tissue comprising using the device as defined in claim 50.

52. A heart treatment device comprising a scaffold structure sized and configured to rest adjacent to endocardial tissue, the scaffold structure supporting a therapeutic agent delivery site.

5 53. A method of treating endocardial tissue comprising using the device as defined in claim 52.